

GILLOTT, CEDRIC. 1980. *Entomology*. Plenum Press, New York and London, xviii + 729 pp. Hard cover \$49.50; soft cover \$22.50.

Of the several books on general entomology published in recent years, this is one of the best. Its coverage of basic entomology is extensive, making it an excellent reference text. The author intends for the book to be used as a "text for senior undergraduates taking their first course in entomology", and, indeed, it would be good if such students were given time to master the material in this text in one course. However, it covers too much ground for a single semester but could be appropriate for a two semester course.

Section I (Chapters 1-10) on evolution and diversity, is perhaps a bit long (300 pages) for an introductory text. For example, Chapter 2 (Insect Diversity) contains 9 page discussion (a good one) on the origin and evolution of insect wings and a discussion of the Heslop-Harrison theory of pupal origin which concludes with the criticism that the theory lacks supporting evidence. The lengthy discussion of phylogenetic relationships of pterygotes is also excellent, but would be difficult reading for those unfamiliar with the terminology and having little experience with extant orders. *Insect Evolution* may have been a better title for Chapter 2 than *Insect Diversity*.

Chapter 1 (Arthropod Evolution) discusses the three major theories of Arthropod evolution and comes down firmly in favor of the polyphyletic school. In spite of this, the major lineages suggested by this theory are not given equal coverage in the rest of the chapter. Some comments on the relative abundance of arachnids would have been helpful, in fact, arachnids and crustaceans could have been given equal space. Most of the drawings in this chapter are unlabelled. When compared with other chapters in the book, this one is somewhat sketchy, giving an unfortunate first impression.

Chapter 3 (External Structure) presents a well balanced overview of its topic, and illustrated with relabelled drawings taken largely from Snodgrass' works. Chapter 4 (Classification and Identification) wisely begins with clear definitions of terms such as systematics, classification, identification and taxonomy and comments on disagreements regarding these definitions. A short discussion of natural and artificial classification schemes follows. The chapter also includes an essay on the history of insect classification and a key to insect orders. All are well done.

The remainder of Section I (Chapters 5-10) consists of a review of the insect orders, each covered in the following manner: order name, synonyms, common name and a short description. These are arranged to stand out clearly from the rest of the text, and are set in smaller type. Following each order's description, are short sections on general structure, life history, phylogeny and classification, and literature (including several references for each order). Illustrations are appropriate and well done, and the phylogenetic trees given for most major orders are a helpful addition. These 5 chapters embody approximately one-third of the book.

Section II (Chapters 11-18) covers aspects of anatomy and physiology in 150 pages. Chapter 11 is an excellent introduction to the insect integument, with highlights for this reviewer being the discussions of cuticular structure and color.

Chapter 12 (Sensory Systems) is good as far as it goes. Some illustrations or photographs and a discussion of sensillar ultrastructure would have enhanced the presentation, as this area is by now well enough understood to make some generalizations. The physiology of chemoreception is also better known than this chapter suggests. Two helpful reviews in this regard, Kaissling (1971) and Hansen

(1978) are not mentioned. Chapter 13 (Nervous and Chemical Integration) presents a concise and up to date overview of the endocrine system, but falls somewhat short in the part on nervous integration. The author attempts to summarize the physiology of neural integration, including a discussion of membrane physiology, in four pages with a single diagram showing a simple reflex circuit. The result is probably too general to be very useful. Extensive work has been done on insect walking which could have been used to illustrate current concepts of nervous integration in insects. Pearson et al. (1973) and Bowerman (1977) have written a reviews of this area. The discussion on pheromones could have been improved by including something on the importance of 'minor' pheromone components. The review by Seabrook (1978) could have helped here.

Chapter 14 (Muscles and Locomotion), is generally well done, though a near classic work on insect flight by Nachtigall (1974) seems to have been overlooked.

Chapter 15 presents an excellent overview of respiration in both terrestrial and aquatic insects. Chapter 16 (Food Uptake and Utilization) includes gut morphology, gut physiology and a discussion on metabolism, all are well done. Food selection and feeding, however, are treated quite superficially. Insect host-plant relationships have been given considerable attention by ecologists, behaviourists and physiologists for several decades, and recent advances in these areas would form an excellent basis for a discussion of feeding behaviour. More serious is the lack of reference to Dethier (1976). In this book, "The Hungry Fly" extensive studies on feeding behaviour and related physiology covering more than 20 years are clearly summarized.

Circulation, excretion and water balance are given good coverage in Chapters 17 and 18, while Chapters 19-21 present a thorough treatment of reproduction and development. The discussion of environmental and endocrine factors affecting female maturation and the figures comparing endocrine relationships in 4 insect species are excellent.

Two chapters (22 and 23) on the abiotic and biotic environment give a good introduction to classical insect ecology. The final chapter, entitled Insects and Man, considers beneficial and harmful insects and stresses the importance of integrated pest management. Major problems with chemical control, particularly resistance to insecticides, are highlighted, and a good discussion of biological control with a table of suitable examples is presented.

REFERENCES

- Bowerman, R.F. (1977) Control of arthropod walking. *Comp. Biochem. Physiol.* 56A: 231-247.
- Dethier, V.G. (1976) *The Hungry Fly*. Harvard University Press, Cambridge, London.
- Hansen, K. (1978) Insect chemoreception, In: *Receptors and Recognition, Ser. B. Vol. 5. Taxis and Behaviour*. G.L. Hazelbauer (ed.). Methuen.
- Kaissling, K.E. (1971) Insect olfaction. In: *Handbook of Sensory Physiology. IV, Chemical Senses, Part 1, Olfaction*. L.m. Beidler (ed.). Springer, Berlin, Heidelberg, New York.
- Nachtigall, W. (1974) *Insects in Flight*. George Allen and Unwin Ltd., London.
- Pearson, K.G., Fournier, C.R. and Wong, R.K. (1973) Nervous control of walking in the

cockroach. In: Control of Posture and Locomotion. R.B. Stein, K.G. Pearson, R.S. Smith, J.B. Redford (eds.). Plenum, New York.

Seabrook, W.D. (1978) Neurobiological contributions to understanding insect pheromone systems. *Ann. Rev. Entomol.* 23: 471-485.

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NOTICE

PIFON, A NEW PERMANENT INTERNATIONAL FILE OF NATURALISTS

In 1980 a new institution, the Oxycopsis Pond Research Station was established in a wooded area in upstate New York. Among other projects the Institute compiles and maintains a coded information file of naturalists of the world, PIFON (acronym for Permanent International File of Naturalists). This international register includes well over 10,000 contemporary naturalists, and in addition a file of all persons listed in *The Naturalist's Directory (International)* since the first edition in 1877. Thus PIFON is the world's most complete listing of naturalists, past and present. This wealth of data is available for the use of any person registered in PIFON.

The 44th edition of *The Naturalists' Directory (International)* is being compiled from data in PIFON. All 10,000 persons were contacted in 1980 and all institutions in 1981 to urge registration in PIFON. Now the six parts of the new 44th edition (to be called volume 44) are being published. The six parts are: Part I: *The Naturalists' Directory of Insect Collectors and Identifiers (International)*; Part II: *The Naturalists' Directory of Plant Collectors and Identifiers (International)*; Part III: *The Naturalists' Directory of Bird Watchers (International)*; Part IV: *The Naturalists' Directory of Field Biologists (International)*; Part V: *The Naturalists' Directory of Rock, Mineral, and Fossil Collectors (International)*; Part VI: *The Naturalists' Directory (International): Subject, Geographical, and Name Index*. Each part is complete in itself, but the last part is a general index and cross-reference for the other five parts for individuals and libraries using two or more parts.

All persons registered in PIFON will receive a registration card showing their unique registration number. Among the other advantages of being registered is access to the unpublished data in the PIFON file. Registration is free. A charge of \$1.00 to cover cost of photocopying and mailing is required of those using the file. Requests may be made at anytime by writing or by phone.

To be registered in PIFON send the following information (please use block letters or type): 1) name (last or family name underlined; include Dr., Prof., Mr., Mrs., Ms., etc.); 2) mailing address (shortest form); 3) phone number (include area code); 4) group of main interest, area of specialization (e.g., family group name, etc.) and kind of interest (e.g., collecting, exchanging, systematics, ecology, etc.); 5) geographical area of greatest interest; 6) short statement giving interest details (not over 25 words); 7) if a taxonomist, list groups willing to identify for others; 8) signature and date. These data will be coded and entered into the file. Those already listed should send changes as they occur. No person is listed unless these data are supplied by that person. The right to edit all listings published in the Directory is reserved.

The deadline for submitting entries for each edition is three months before publication. Parts will be issued every four months, resulting in a two year cycle for the entire volume. Regardless of the deadline dates, however, persons are urged to register immediately upon reading this note, thus making available their data to others using the PIFON file.

The parts of the volume are sold by the publisher, Flora and Fauna Publications, by subscription only, either as single parts, or multiple parts, with a discount for subscriptions to the entire volume.

Send registration and/or requests for further information to the compiler and editor: Dr. Ross H. Arnett, Jr., Oxycopsis Pond Research Station, 90 Wallace Road, Kinderhook, NY 12106 USA. (Phone: (518) 758-7219).—R.H.A.